Raj Garkhedkar

Huntsville, Alabama * www.linkedin.com/in/rajgark * www.github.com/rajgark * www.rajgark.github.io

IMMEDIATE OBJECTIVE

Data Scientist & Physicist. Striving to innovate by applying myself & my academic knowledge to problems. Passionate about learning and utilizing the latest technologies/frameworks to optimize & upgrade workflows. Daily rigorous experience with the entire data science pipeline - from ingestion to CI/CT/CD to MLOps/DevSecOps, and using mathematics/physics to build robust deep learning architecture.

Active TS clearance

PROJECT & PROFESSIONAL EXPERIENCE

DATA SCIENTIST *COLSA Corporation, Huntsville, AL*

January 2022

- SciML – creating mission ready and rigorous AI systems on the Bounty Hunter program.
- Built API's that interfaced with USRP SDR's and stream data to ML models
- Built containers that use Kafka & MongoDB to stream & store data - from an SDR to a database
- Built containers that utilize REST APIs to interact with a front end that establish stream connections with hardware
- Built microservice containers that allow for airgapped & restricted environment ready ML inferencing on data feeds
- Built automated testing frameworks for use in CI/CT/CD pipelines and utilizing Docker Swarm & Kubernetes for container orchestration
- Built various models for classification, excision, & segmentation of complex data

MACHINE LEARNING ENGINEER INTERN *COLSA Corporation, Huntsville, AL*

Summer 2021

- SciML – dimensionality reductions/transforms, nonlinear dynamics & control theory implementation. Used Python & Julia for signal processing & noise analysis
- Sparse Identification of Nonlinear Dynamical systems (SINDy) modeling and optimization work through PySINDy – algorithmic discovery of differential equations that model nonlinear systems through fundamental governing principles (Lorenz 63 & Korteweg-De Vries Equation)
- Algorithm development through the mathematical construct behind neural networks to tailor activation functions, loss functions, and network layers through modeling ordinary/partial differential equations, linear algebra, abstract algebra, & data structures

DATA ENGINEERING INTERN *Enkon Energy Advisors, Houston, TX*

Summer 2019 and Summer 2020

- Used Python to create web scraper script, to capture daily NGL flows from various pipelines throughout the country at their receipt/delivery points. The web-scraped data is automatically appended to our databases thus fully automating the data collection behind consulting projects.
- Wrote an article, published in Enkon's monthly newsletter, on the Current State of Liquefied Natural Gas where I examined the headwinds and drivers that guided the first and second wave of LNG Projects and global exports, also examined the global supply and demand.
- Completed with over 4000 lines of Python code with my own helper functions to ease analytics.

ROBOTICIST *Illinois Wesleyan Univ., Bloomington, IL*

Fall 2020 and Spring 2021

- Designing and building a robot modeled after the Boston Dynamics dog, controlled via a PlayStation controller. All CAD and programming work done independently by my team.
- This work will be presented at a research conference in April.

EDUCATION

ILLINOIS WESLEYAN UNIVERSITY, Bloomington, IL

Bachelor of Science in Physics, Minor in Data Science, Fall 2021

- GPA: 3.46/4.0
- Courses: Physics I/II, Modern Physics, Calculus sequence, Mathematical Methods in Physics, Scientific Imaging, Computer Science I, Quantum Mechanics, Electricity & Magnetism, Experimental Physics, Momentum of Photons, Discrete Mathematics, Statistics for Economics, Applied Data Analysis, Deep Learning, How Things Work, Entrepreneurship, Nanoelectronics
- Member of: IEEE, APS, SPIE, SPS and data science club

ADDED COMPETENCIES

- Python
- PyTorch, TensorFlow
- Igor Pro
- SQL (beginner)
- MLOps & DevSecOps
- Julia (for Scientific Machine Learning)
- Mathematica
- Docker & Kubernetes
- C++ (beginner)
- GitLab, Prometheus
- Amplification, op-amps, Quanta measurement
- AutoDesk *AutoCAD*, AutoDesk *Fusion 360*
- NI LabVIEW programming (beginner)

ADDITIONAL INFORMATION

- Experience with rigorous machine learning frameworks for scientific applications
- Trained to always keep an eye on emerging opportunities.
- Trained to check, carefully, key claims that work/innovation depends upon.
- Trained to ground conversations in reliable principles (by returning to what's fundamental).
- Trained to gain insight by considering extreme limiting cases.
- Trained to write & document before, during, and after work.
- Proficient in English, natively speak Hindi & Marathi, limited working proficiency in Spanish.
- I am a soccer and Formula 1 fan; but I love watching all sports.
- U.S. Citizen

REFERENCES

- Ames Professor of Physics, Gabriel C. Spalding <gspaldin@iwu.edu>
- Associate Professor of Psychology & Data Science, Brad Sheese <bsheese@iwu.edu>
- Professor of Physics, Bruno deHarak <bdeharak@iwu.edu>
- Professor of Physics, Thushara Perera <tperera@iwu.edu>